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APPLICATION

FOR UNITED STATES LETTERS PATENT

SPECIFICATION

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN THAT I, **ROBERT J. JIMENEZ**, a citizen of
UNITED STATES OF AMERICA, have invented a new and useful
PIPE HEATING APPARATUS of which the following is a
specification:

PIPE HEATING APPARATUS

BACKGROUND OF THE INVENTION

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Field of the Invention

The present invention relates to hot boxes and more particularly pertains to a new pipe heating apparatus for heating
10 PVC pipe to facilitate bending.

Description of the Prior Art

The use of hot boxes is known in the prior art. Illustrative
15 examples of such devices include U.S. Patent No. 4,437,453; U.S. Patent No. 6,033,213; and U.S. Patent No. 6,257,88.

While these devices fulfill their respective, particular objectives and requirements, the need remains for an apparatus,
20 which is easily portable to and from the job site.

SUMMARY OF THE INVENTION

To this end, the present invention generally comprises a
25 housing having a lower portion and an upper portion, and at least one aperture extending through a wall of the housing. The lower portion includes a bottom wall for resting upon a horizontal support surface, and a lower perimeter wall extending upwardly from the bottom wall. Similarly, the upper portion includes a top wall and a
30 upper perimeter wall extending downwardly from the top wall. The lower perimeter wall and the upper perimeter wall both have the same form and size. The upper portion may be positioned to rest

upon the lower portion. Thus, an edge of the upper perimeter wall abuts an edge of the lower perimeter wall. The housing defines an interior space for receiving a portion of a pvc pipe.

5 Polyvinyl chloride (PVC) thermoplastic is a polymer of vinyl chloride which is hard and rigid and used extensively as an electrical insulator, or conduit, for wires and cables. PVC is also widely used for various types of plumbing applications, primarily as drain pipes, as usage is restricted to certain applications by
10 building codes in many areas. One of the more difficult and time consuming tasks associated with using PVC pipes is bending the pipe to the required shape and contour prior to installation. To accomplish this, heat is applied, normally using a heat gun or a blow torch. A lot of time can be expended to heat the PVC
15 sufficiently to achieve the degree of malleability necessary to bend the pipe. This task is even more time consuming when the ambient temperature is cold.

The Pipe heating apparatus would be rectangular, aluminum
20 box and would have overall dimensions of 8 inches in height, 16 inches in width, and 8 inches in depth. The Pipe heating apparatus is comprised of an upper and lower section which are hinge connected together on one side. A circular opening, with a diameter of 2 inches, is featured at the center of the top panel of
25 the upper section. This opening would function as an insertion hole in which the nozzle of a heat gun would be inserted. To facilitate equal distribution of the heat generated by the heat gun, two metal plates are attached to the underside of the top panel, immediately below the heat gun insertion opening. The two metal plates extend
30 downward at an approximate 45 degree angle from the underside,

one plate angled toward the left side of the interior area and the second plated angled toward the right side of the interior area. The lower section affords a smaller, circular opening (1 inch diameter) on one end which would be used for the insertion of a blow torch
5 nozzle. A metal, mesh plate is integrally attached to the top of the lower section which would facilitate the even distribution of the heat produced by a blow torch throughout the interior area. In addition to the heat source openings, the upper and lower sections feature a semicircular opening at each end which, when the top lid
10 is closed, are mutually aligned to form a circular opening which has a diameter of 1 ¼ inch. The diameter of the openings would enable the Pipe heating apparatus to accommodate ½ inch to 1 inch PVC pipes which would be horizontally positioned across the width of the box. A plastic covered handle is attached to the exterior top
15 side of the upper section, centrally positioned, which would be used for conveniently carrying the box.

Whenever the Pipe heating apparatus is to be used for heating and bending a pipe, the top section would be opened, the pipe
20 nestled into the semicircular openings on the lower section, and the top section closed again. The heat source of choice, a heat gun or blow torch, would then be inserted into the opening to supply heat to the interior area. The pipe could be easily rotated to expedite the even transfer of heat to PVC material until the required degree
25 of malleability to bend the pipe had been achieved. The Pipe heating apparatus is an innovative and practical device that would make the task of bending PVC pipes much easier and less time consuming, benefits that could be fully appreciated by various types tradesmen, do-it-yourselfers, and others.

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There has thus been outlined, rather broadly, the more important features of the invention in order that the detailed description thereof that follows may be better understood, and in order that the present contribution to the art may be better appreciated. There are additional features of the invention that will be described hereinafter and which will form the subject matter of the claims appended hereto.

The objects of the invention, along with the various features of novelty which characterize the invention, are pointed out with particularity in the claims annexed to and forming a part of this disclosure.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be better understood and objects other than those set forth above will become apparent when consideration is given to the following detailed description thereof. Such description makes reference to the annexed drawings wherein:

Figure 1 is a schematic perspective view of a new pipe heating apparatus according to the present invention.

Figure 2 is a schematic perspective view of the present invention in the closed position.

Figure 3 is a schematic front view of the present invention.

Figure 4 is a schematic side view of the present invention.

Figure 5 is a schematic cross-sectional view of the present invention.

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DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference now to the drawings, and in particular to
Figures 1 through 6 thereof, a new pipe heating apparatus
10 embodying the principles and concepts of the present invention and
generally designated by the reference numeral 10 will be described.

As best illustrated in Figures 1 through 6, the pipe heating
apparatus 10 generally comprises a housing 20 having a lower
15 portion 21 and an upper portion 31, and at least one aperture 40
extending through a wall of the housing 20.

The lower portion 21 includes a bottom wall 22 for resting
upon a horizontal support surface, and a lower perimeter wall 23
20 extending upwardly from the bottom wall 22. Similarly, the upper
portion 31 includes an top wall 32 and a upper perimeter wall 33
extending downwardly from the top wall 32. The lower perimeter
wall 23 and the upper perimeter wall 33 both have the same form
and size. The upper portion 31 may be positioned to rest upon the
25 lower portion 21. Thus, an edge of the upper perimeter wall 33
abuts an edge of the lower perimeter wall 23. The housing 20
defines an interior space for receiving a portion of a pvc pipe 2.

The aperture 40 is positioned within the housing 20 for
30 selectively receiving a heat source 4. Preferably the aperture 40 is
positioned through the lower perimeter wall 23. The aperture 40 has
a diameter of approximately $\frac{3}{4}$ of an inch for selectively receiving a

portable torch 6 as a source of heat for heating the portion of pvc pipe 2 received in the interior space.

Most preferably, a top aperture 50 is also positioned through the top wall 32. The top aperture 50 has a diameter of approximately two inches for selectively receiving a nozzle of a heat gun 8 as a source of heat for heating the portion of pvc pipe 2 received in the interior space.

The upper portion 31 may be hingably coupled to the lower portion 21 to facilitate insertion and removal of the portion of pvc pipe 2 received in the interior portion.

Preferably, four notches are positioned through the perimeter walls 23, 33 of the housing 20. A first notch 36 is positioned along a medial portion of a lower edge of a first side 34 of the upper perimeter wall 33. A second notch 26 is positioned along a medial portion of an upper edge of a first side 24 of the lower perimeter wall 23. The second notch 26 is aligned with the first notch 36 when the upper portion 31 is positioned on top of the lower portion 21. A third notch 37 is positioned along a medial portion of a lower edge of a second side 35 of the upper perimeter wall 33. A fourth notch 27 is positioned along a medial portion of an upper edge of a second side 25 of the lower perimeter wall 23. The fourth notch 27 is aligned with the third notch 37 when the upper portion 31 is positioned on top of the lower portion 21. The first 36, second 26, third 37, and fourth notches 27 facilitate positioning a portion of pvc pipe 2 within the interior space when the pvc pipe 2 has a length greater than a length of the housing 20.

In an embodiment the first 36 and second notches 26 form an opening having a diameter of approximately one and one half inches when the first 36 and second notches 26 are aligned. Similarly, the third 37 and fourth notches 27 form an opening also having a diameter of approximately one and one half inches when the third 37 and fourth notches 47 are aligned.

An upper heat deflector assembly 60 includes a first portion 61 positioned adjacent a first side of the top aperture 50, and a second portion 62 positioned adjacent a second side of the top aperture 50. The first 61 and second portions 62 facilitate heat flow away from the top aperture 50 into the interior space.

In an embodiment the first 61 and second portions 62 of the upper heat deflector assembly 60 have a perpendicular relationship with a longitudinal axis of the upper portion 31 of the housing 20.

In a further embodiment the first 61 and second portions 62 of the upper heat deflector assembly 60 are positioned such that the first 61 and second portions 62 angle downwardly into the interior space as they extend away from the top aperture 50.

A lower heat deflector assembly 70 may be positioned within the lower portion 21 above the aperture 40. The lower heat assembly 70 extends along a length of the lower portion 21. The lower deflector assembly 70 facilitates heat flow away from the aperture 40 within the interior space.

In an embodiment the lower heat deflector assembly 70 further comprises a first extent 71, a second extent 72, and a third

extent 73. The first extent 71 is positioned along a third side 28 of the lower portion 21, and extends along a length of the lower portion 21. The second extent 72 is operationally coupled to the first extent 71. The second extent 72 also extends along a length of the lower portion 21. The second extent 72 has a spaced substantially parallel relationship with the bottom wall 22. The third extent 73 is operationally coupled to the second extent 72. The third extent 72 extends along a length of the lower portion 21. The third extent 72 is positioned adjacent to a fourth side 29 of the lower portion 21 opposite the third side 28 of the lower portion 21. The first 71, second 72, and third extents 73 when combined extend along a width of the lower portion 21.

In a further embodiment the first extent 71 has an angular relationship to the second extent 72 such that the first extent 71 extends upwardly as the first extent 71 extends away from the second extent 72; and the third extent 73 also has an angular relationship to the second extent 72 such that the third extent 73 also extends upwardly as the third extent 73 extends away from the second extent 72.

In a still a further embodiment the lower heat deflector assembly 70 has a plurality of apertures 74 dispersed in an array along a length and width of the lower heat deflector assembly 70 to facilitate heat transfer from the portable torch 6 when positioned in the aperture 40.

With respect to the above description then, it is to be realized that the optimum dimensional relationships for the parts of the invention, to include variations in size, materials, shape, form, function and manner of operation, assembly and use, are deemed

readily apparent and obvious to one skilled in the art, and all equivalent relationships to those illustrated in the drawings and described in the specification are intended to be encompassed by the present invention.

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Therefore, the foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable
10 modifications and equivalents may be resorted to, falling within the scope of the invention.